U.S. Bureau of Biological Survey

WILDLIFE REVIEW

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CONTENTS

	Page
Wildlife (General)	
Biography & History	2
Communities & Habitats	2
Control & Mortality	3
Diseases	3
Education	4
Faunas & Manuals	5
Food	5
Management	5
Populations	8
Values	9
Mammals	
Faunas & Manuals	9
Populations	9
Big Game	
General	9
Deer	10
Antelope & Elk	12
Caribou & Moose	12
Bear	13
Furbearers	
General	13
Muskrat	14
Beaver	14
Mustelids	15
Coyote & Foxes	15
Raccoon, etc.	16
Rodents	
General	17
Mice & Rats	17
Squirrels, etc.	18
Rabbits	18
Insect-eaters	19
Marine	20
Birds	
Behavior	20
Diseases	21
Faunas & Manuals	21
Populations	21
Waterfowl	22
Fish-eaters	25
Rails	25
Shorebirds	26
Upland Game	
General	26
Bobwhite	26
Pheasant	27
Grouse	28
Wild turkey, etc.	29
Doves	29
Hawks & Owls	30
Songbirds	30
Amphibians & Reptiles	32
Fishes	35
Mollusks	35
Insects	35
Vegetation	
Floras & Manuals	36
Forest	36
Brushland	37
Grassland	38
Wildlife Plants	38
Aquatic	38
Land & Soils	39
Water	39
Climate & Weather	39
Author index	40
Serials abstracted	43

Except as indicated, abstracts are by Neil Hotchkiss, editor.

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WILDLIFE (GENERAL)--BIOGRAPHY & HISTORY

BEACH, GRACE O. Pennsylvania's wildlife conservation history. Pennsylvania Game News 21(6): 21-28, illus. through 22(6): 18-23, illus. September 1950 through September 1951.

Chapters on "Nature Sets The Stage", "Two Black Centuries" (extermination or near extermination through market hunting, spring shooting, and other causes of bison, passenger pigeon, elk, white-tailed deer, beaver, fisher, marten, wolverine, flicker, upland plover, black bear, and wild turkey), "Stabs in the Dark" (at protection), "A Commission Is Born", "All That Glitters Is Not Gold" (early difficulties of the Game Commission), "Murder Is Done", "Four Major Strides Forward" (buck law, hunter's license law, game refuges, public hunting lands), "Money and Land Pose New Problems", "From Too Little to Too Much Game" (backfire of the buck law; in places, too many bear, beaver, rabbits, pheasants), "The Commission Grows Up", "Finances".

WILDLIFE (GENERAL)--COMMUNITIES & HABITATS
(See also WILDLIFE (GENERAL)--FAUNAS & MANUALS, Jaeger)

ALLEE, W. C. and SCHMIDT, KARL P. Ecological animal geography. Second edition. 715 pages, illus. John Wiley and Sons, Inc., New York. 1951. $9.50.

This book is based on Richard Hesse's "Tiergeographie auf oekologischer Grundlage." Its four parts present much detailed information on "The Ecological Foundations of Zoögeography", "The Distribution of Marine Animals", "The Distribution of Animals in Inland Waters, a Phase of Limnology", and "The Distribution of Land Animals."

BEDICHEK, ROY. Karánkaway country. 290 pages, illus. Doubleday & Co., Inc., Garden City, N. Y. 1950. $3.75.

Human history, natural history, and outdoor philosophy on the central Texas coast. Among the subjects particularly reported upon, and used as starting places for wider observations and reflections, are whooping cranes, wildlife refuges, wind erosion, coons, brush country, sky, prairie chickens, chimney swifts, goats, stream silt, and the conservation of little and big waters.

MUSSER, FRANCIS B. An ecological study of the Mothersbaugh Swamp of Huntingdon County, Pennsylvania. M.S. thesis, The Pennsylvania State College. 1951.

PEARSALL, W. H. Mountains and moorlands. 321 pages, illus. Collins, London. 1950. 21 shillings (copied from The Scientific Monthly for August 1951, page 135).

A review by F. R. Fosberg says, in part, "The aim of a regional ecological study is to develop an understanding of an environment and all the creatures in it as a functioning, dynamic system." "Mountains and Moorlands .....approaches more nearly such an accomplishment than anything that has ever come to my attention." The book deals with the northwestern half of Great Britain. The many good illustrations are a necessary adjunct to the text.

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WILDLIFE (GENERAL)--COMMUNITIES & HABITATS--Continued

STOW, MARCELLUS H. and others. The James River Basin: past, present and future. 843 pages, illus. The Virginia Academy of Science, Box 1395, Richmond 11, Va. 1950. $6.00.

The 5 parts of this highly informative book deal with (1) conservation, recreation, and education, (2) biological sciences, (3) earth sciences, (4) mathematical and applied sciences, and (5) industry and transportation. More than 250 pages on biological sciences include discussions by 10 different authors of botany, plant pathology, entomology, mollusks, marine fishes and invertebrates, freshwater fishes, amphibia and reptiles, birds, mammals, and medical sciences.

TILDEN, FREEMAN. The National Parks: what they mean to you and me. 417 pages, illus. Alfred A. Knopf, New York. 1951. $5.00.

An inspiring, informative discussion of the significance of the system and of many individual parks and monuments. The parks and monuments are grouped to show their predominant character: forest, volcanic, uplift and erosion, caves, deserts, the work of glaciers, the Tropics.

WILDLIFE (GENERAL)--CONTROL & MORTALITY

SPRINGER, PAUL F. and WEBSTER, JOHN R. Biological effects of DDT applications on tidal salt marshes. Transactions of the Sixteenth North American Wildlife Conference. Pages 383-396. 1951.

In 1949 and 1950, the authors studied the hazards to wildlife of DDT used experimentally for controlling mosquitoes on a New Jersey salt marsh. Birds and mollusks apparently were not harmed; but many killifish, blue crabs, fiddler crabs, and small crustaceans were killed.

YEAGER, LEE E. and RIORDAN, LAURENCE E. The spruce beetle and Colorado's game and fish. Colorado Conservation, December 1950. Pages 8-10, 25, illus.

The Englemann spruce beetle has killed more than half a million acres of high-country spruce and lodgepole pine in Colorado during the last 10 years. The effects on wildlife are complex. It is imperative that fires be prevented.

WILDLIFE (GENERAL)--DISEASES

LAMPIO, TEPPO. Only mild outbreaks of disease in game areas during the year 1948/49. Papers on Game Research 6: 39-44, illus. 1951.

A number of parasites are reported from game species in Finland, including moose, fox, hare, squirrel, and wildfowl. An epizootic of coccidiosis in squirrels was the most severe.--C. M. Herman.

LAMPIO, TEPPO. Winter 1949/50 a general year of disease in the game areas in Finland. Papers on Game Research 6: 44-47, illus. 1951.

Discusses disease in forest birds, water birds, hare, moose, muskrat, and squirrel. Lung worms in hares and coccidiosis in squirrels were particularly prevalent.--C. M. Herman.

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WILDLIFE (GENERAL)--DISEASES--Continued

PÄTIÄLÄ, RISTO. On fungus diseases in game. Papers on Game Research 6: 21-22, illus. 1951.

Lists several fungus diseases which have been observed in game species in Finland.--C. M. Herman.

RAUSCH, ROBERT. Biotic interrelationships of helminth parasitism. Public Health Reports 66(29): 928-934. July 20, 1951.

This issue of Public Health Reports is almost entirely devoted to public health problems in Alaska and includes papers on health of native human populations, control of biting insects, sewage and water disposal, climatic adaptation in arctic and tropic animals, and facilities and opportunities for research at the Arctic Health Research Center. In the paper by Rausch, discussion is based on autopsy findings of more than 4,000 Alaskan birds and mammals, supplemented by field studies over much of the Territory. Evidence is reported that birds nesting in arctic regions, but wintering much further south, are usually infected by cestodes while on the breeding grounds as nestlings or nonflying immatures. This is particularly true among waterfowl. The circumpolar distribution of some parasites of rodents is discussed. The epizoology of trichinosis in bears, marine mammals, and other wildlife species is discussed, particularly in relation to infection in man; and various relationships of the man-dog-ruminant cycle of Echinococcus are presented.--C. M. Herman.

REEVES, WILLIAM C. The encephalitis problem in the United States. American Journal of Public Health 41(6): 678-686. June 1951.

This arthropod-born virus disease is important in man and horses. The author points out that present evidence indicates a widespread source of vector infection in a variety of domestic and wild avian hosts. Infection in these birds is usually characterized by a complete lack of clinical evidence of infection, the appearance of virus in the blood stream in high titer for a short period of time, and no evidence of chronic infection of a carrier reservoir stage. Mosquitoes appear to be the main vectors where man or horse is involved, and mosquito abatement is the most effective general measure of control. 77 references.--C. M. Herman

WILDLIFE (GENERAL)--EDUCATION

CALHOUN, W. T. Conservation education and information calls for specialists. Transactions of the Sixteenth North American Wildlife Conference. Pages 524-526. 1951.

KNIGHT, T. H. OWEN. Conservation education. Maryland Conservationist 28(2): 8-9, 30, illus. Summer 1951.

The author believes that teaching conservation for the sake of the children will be much more successful than teaching it for the sake of conservation.

WILDLIFE (GENERAL)--EDUCATION--Continued

SCHOENFELD, CLARENCE A. Problems, principles, and policies in wildlife-conservation journalism. Transactions of the Wisconsin Academy of Sciences, Arts and Letters 40(pt.2): 139-169. 1951.

".....wildlife conservation is in large measure a problem in the management of man,....." "The real future of American wildlife lies.....in so reshaping the American sportsman's sense of values that he will go afield to give instead of take, to produce a new perception of his surroundings rather than to consume its crops." The author outlines an educational program in wildlife-conservation journalism that he believes will help to bring about this change in sense of values.

SHORT, A. W. Wildlife conservation extension service activities in relation to the whole conservation picture. Transactions of the Sixteenth North American Wildlife Conference. Pages 562-568. 1951.

SYLVESTER, WALTER R. Applying conservation knowledge to conservation teaching. Transactions of the Sixteenth North American Wildlife Conference. Pages 530-535. 1951.

WILDLIFE (GENERAL)--FAUNAS & MANUALS
(See WILDLIFE (GENERAL)--COMMUNITIES & HABITATS, Stow and others)

JAEGER, EDMUND C. Our desert neighbors. 239 pages, illus. Stanford University Press. 1950. $5.00 (copied from the American Midland Naturalist for May 1951, page 768).

A review by R. L. Livezey says, in part, that this is an appealing book for both laymen and professional biologists. It deals mostly with mammals and birds, and most chapters describe the life and ecology of a single species. There are 33 excellent photos.

WILDLIFE (GENERAL)--FOOD

MARTIN, ALEXANDER C.; ZIM, HERBERT S.; and NELSON, ARNOLD L. American wildlife & plants. 500 pages, illus. McGraw-Hill Book Co., Inc., New York. 1951. $7.50.

"A guide to WILDLIFE FOOD HABITS: the use of trees, shrubs, weeds, and herbs by birds and mammals of the United States". This book has been planned not only for people directly interested in wildlife but also for foresters, landscape gardeners, and botanists. To this end it describes in Part II the food of different kinds of wildlife and in Part III the use by wildlife of different kinds of plants. Tables, maps, and drawings of animals and plants add much to its attractiveness and usefulness.

WILDLIFE (GENERAL)--MANAGEMENT

AGERSBORG, H. P. K. Has wildlife conservation failed? Nature Magazine 44(8): 426-428. October 1951.

The author says it has; but he also says: "A qualified State zoologist, with university trained wildlife protectors having the same status as farm-agents, can perform literal wonders in biological conservation."

WILDLIFE (GENERAL)--MANAGEMENT--Continued

ANONYMOUS. Wildlife authorities say: we ought to shoot more game. Outdoor Life 107(2): 21-23, 98-99, illus. February 1951.
There is local or regional undershooting of many species because of lack of popularity, custom, or sentiment.

BODE, I. T. "The Problems We Face" in managing Missouri wildlife and timber and a report of the 1950-'51 fiscal year. Missouri Conservationist 12(9): 1-32, illus. September 1951.
This article comprises the Missouri Conservation Commission's reports on forestry, information, education, protection, field service, game (investigations, management), development and acquisition, fisheries, and finances.

CRAWFORD, BILL T. The field bag-check method of determining hunting success, pressure, and game kill. Transactions of the Sixteenth North American Wildlife Conference. Pages 307-315. 1951.
Missouri began using this method in 1947. From it has come reliable figures on amount of hunting by the largely unlicensed rural population, and on heavily hunted small game and waterfowl. Its cost is negligible.

DAY, ALBERT M. National wildlife refuges in N. D. North Dakota Outdoors 14(2): 4-5, 14, illus. August 1951.

DURISCH, LAWRENCE L. and MACON, HERSHAL L. Upon its own resources. 136 pages, illus. University of Alabama Press [etc.], University, Ala. 1951. $3.00.
"The state agencies and programs for conserving natural resources--land, forests, streams, wildlife, and minerals--in eight Southeastern states--Alabama, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Virginia--are described, evaluated and compared in this study."

FREEBURN, C. C. Cooperatively developing forest-wildlife resources on the Allegheny National Forest. Transactions of the Sixteenth North American Wildlife Conference. Pages 491-495. 1951.
Description of a cooperative U. S. Forest Service-Pennsylvania Game Commission program begun in 1949. In 11 months of 1950, they pruned and released several thousand apple trees, made nearly 200 acres of slashings, developed 70 acres of forest edge, developed more than a dozen seeps and springs, cleared more than 100 acres, planted 100 acres of grain, and planted 75 acres of waterfowl foods and more than 30,000 seedlings of food and cover plants.

GRASSE, JAMES E. Live-trapping and transplanting in Wyoming. Wyoming Wild Life 15(7): 25-28. July 1951.
A summary through 1950 of transplants of elk, moose, antelope, mule deer, mountain sheep, beaver, sage grouse, and wild turkey.

GRIEB, JACK R. Tally counter holder for making field observations. The Journal of Wildlife Management 15(3): 334-335, illus. July 1951.

WILDLIFE (GENERAL)--MANAGEMENT--Continued

HARRIS, ROBERT W. Use of aerial photographs and sub-sampling in range inventories. Journal of Range Management 3(4): 270-278, illus. July 1951.

LATHAM, ROGER M. The bounty system in wildlife management with particular reference to that of Pennsylvania. M.S. thesis, The Pennsylvania State College. 1951.

MESSELT, M. T. Improving wildlife and land resource management through better public understanding of problems involved. Transactions of the Sixteenth North American Wildlife Conference. Pages 556-562. 1951.

MUSSELMAN, HAROLD E. A wildlife management plan for the Pennsylvania State College farmlands. M.S. thesis, The Pennsylvania State College. 1951.

OLSON, SIGURD F. Summarization of the Sixteenth North American Wildlife Conference. Transactions of the Sixteenth North American Wildlife Conference. Pages 569-584. 1951.

PETERS, W. AUSTIN. Feathers preferred. 198 pages, illus. The Stackpole Company, Harrisburg, Pa. 1951. $3.75.
These interesting experiences of a sportsman and waterfowl breeder in eastern Canada conclude with a program of wildlife management that calls for the active participation of all individuals and organizations concerned, including business and industry. "Let us face the facts squarely. There is less game, less suitable breeding and feeding areas than there ever were before on the continent of North America. There are more hunters wanting to reap their share of what we have. What are we going to do about it?"

SCOTT, ROBERT F. Wildlife in the economy of Alaska natives. Transactions of the Sixteenth North American Wildlife Conference. Pages 508-522. 1951.
"In the face of an increasing harvest of a decreasing wildlife supply, all phases of the resource must be utilized in ways which are both biologically and economically sound. In assuring this, successful application of management and control measures must depend on full knowledge of the many complicated ethnological and biological factors involved."

SHAPTON, WARREN W. P-R report. Michigan Conservation 20(4): 15-20, illus. July-August 1951.
A summary of Pittman-Robertson projects in Michigan from 1939 to 1950.

STILES, BRUCE F. Report of the [Iowa] State Conservation Commission for the biennium ending June 30, 1950. 278 pages, illus. Des Moines, Iowa. 1951.
3 chapters deal with administration, lands and waters, and fish and game. The last has separate sectional reports on game, fisheries, biology (studies of pheasant, migratory waterfowl, and fur and game mammals), and federal aid.

WILDLIFE (GENERAL)--MANAGEMENT--Continued

TEMPLE, J. LAWRENCE. Use of perimeters of impounded areas. Transactions of the Sixteenth North American Wildlife Conference. Pages 339-350. 1951.

Oklahoma's use for public shooting and game management of lands bordering Federal impoundments has been facilitated by cooperative share-cropping and grazing agreements.

TRUAX, WAYNE C. and GUNTHER, LLOYD F. The effectiveness of game management techniques employed on Horicon Marsh. Transactions of the Sixteenth North American Wildlife Conference. Pages 326-330. 1951.

This area is administered in part by the State of Wisconsin, in part by the U. S. Fish and Wildlife Service. 12,000 acres of aquatic habitat is used by fish, waterfowl, and muskrats. 16,000 acres of semiaquatic habitat is used by Canada geese, deer, muskrats, and pheasants. 4,000 acres of upland is used by pheasants, Hungarian partridges, rabbits, quail, raccoons, geese, and ducks. In 10 years there have been great increases in numbers of Canada geese, muskrats, and pheasants. State research projects on waterfowl and fur are located at Horicon Marsh and are supplying management information.

WHITAKER, J. R. and ACKERMAN, EDWARD. American resources: their management and conservation. 497 pages, illus. Harcourt, Brace. New York. 1951. $6.75 (copied from The Scientific Monthly for August 1951, page 134).

A review by Stanley A. Cain says, in part, "If you want some of the most pertinent information about cultivable land, grasslands and forest lands, water resources, minerals, and recreation (including fish and wildlife), you will find it in the chapters under the five sections of the body of the book with the above headings. But you find much more than data, however important; you find interrelations among resource problems, and you find integration in the treatment." "The high point of the book, and its greatest distinction and usefulness, I believe, are in the concluding chapter, entitled An American Citizen's Guide to Conservational Resource Management. Here you find social philosophy and perspective, and here the reader is led to the crux of many matters--....."

WILDLIFE (GENERAL)--POPULATIONS
(See also BIRDS--SHOREBIRDS, East)

COLE, LaMONT C. Population cycles and random oscillations. The Journal of Wildlife Management 15(3): 233-252, illus. July 1951.

The author concludes, in part: "If, as is known to be the case, many factors operate separately to favor population change, we might expect the resultant of many haphazard influences to appear as essentially random fluctuations." ".....in any given situation one or a few particular environmental factors may be expected to exert the predominant influence on population change and it is important to detect such effects. By attributing population cycles to random variation we merely imply that the influence of the environment is not simple."

WILDLIFE (GENERAL)--VALUES
(See also WILDLIFE (GENERAL)--MANAGEMENT, Scott)

SEARS, PAUL B. Wildlife in today's economy: biological and ecological values. Transactions of the Sixteenth North American Wildlife Conference. Pages 23-26. 1951.

MAMMALS--FAUNAS & MANUALS

ROSLUND, HARRY R. Mammal survey of northcentral Pennsylvania. 55 pages, illus. Pennsylvania Game Commission, Harrisburg, Pa. 1951.
The author describes the region; discusses, in detail, the habitat and habits of the individual species; and summarizes changes in populations. He recommends, among other things, that an integrated study be made of all phases of deer management and that varying hares be reintroduced experimentally.

MAMMALS--POPULATIONS

MacLULICH, D. A. A new technique of animal census, with examples. Journal of Mammalogy 32(3): 318-328, illus. August 1951.
"A method is presented of estimating range of movement of a given species, age class, and sex of animal during the trapping period. From that and the number of animals caught the density of population may be estimated." "This Simultaneous Trap-line Method uses a pair of quadrats of widely different size or a quadrat and a straight line of traps."

MAMMALS--BIG GAME (GENERAL)

ANONYMOUS. Big game harvest in 1950. Wyoming Wild Life 15(6): 10-15, 34-36, illus. June 1951.
Deer, antelope, elk, moose, bighorn sheep, and bear in Wyoming.

GAUFIN, D. M. and others. Range for big game and livestock in Utah. 24 pages, illus. Utah State Department of Fish and Game, Bulletin 2. 1950.
"Most of Utah's mountains and foothills are grazed in common by big game and livestock. The relationships of these animals to each other and to the range are complex and are not fully known." This bulletin describes livestock grazing, big game grazing, general range condition, and game management objectives.

HALL, J. ALFRED. Annual report to the chief of the Forest Service of the Pacific Northwest Forest and Range Experiment Station for the calendar year 1950. 62 pages. U. S. D. A., Pacific Northwest Forest and Range Experiment Station, Portland, Oregon. March 1951.
Studies on big game-livestock relationships are described on page 21.

HERMAN, CARLTON M., and SAYAMA, KENJI. Further notes on Selenomonas from California mammals. Transactions of the American Microscopical Society 70(2): 185-187. April 1951.
S. ruminantium is reported from the rumen of antelope, deer, and elk in California.--C. M. Herman.

MAMMALS--BIG GAME (GENERAL)--Continued

McKEAN, WILLIAM. Status of big game in N. D. North Dakota Outdoors 13(12): 9-11, illus. June 1951.
White-tailed deer, mule deer, antelope, elk, etc.

MAMMALS--BIG GAME (DEER)
(See also BIRDS--BEHAVIOR, Riney)

ADAMS, LOWELL. White-tailed deer browsing on natural conifer seedlings. 3 pages. U. S. D. A., Northern Rocky Mountain Forest and Range Experiment Station, Research Note No. 105. September 1951.
In Lincoln County, Montana, white-tailed deer have been seriously depleting ponderosa pine seedlings. There appear to be too many deer for the supply of winter browse, as well as too many for good pine reproduction.

ALLEN, GEORGE W. Effects of screw-worm on deer in the Southeast. Transaction of the Sixteenth North American Wildlife Conference. Pages 135-143, illus. 1951.
This paper traces the history of screw-worm (Cochliomyia americana) in the southeastern states, particularly in its relation to deer. A severe outbreak occurred in 1948, 1949, and 1950. Deer losses were high in 1950. Domestic livestock production, as well as weather conditions, has a definite relationship to screw-worm occurrence in deer. The author concludes with a plea for further consideration of pathological controls in the management of deer populations.--C. M. Herman.

ALLEN, ROBERT P. Can we save the Key deer? Natural History 60(2): 79-83, illus. February 1951.
The author describes the hazardous environment on the Lower Florida Keys of these tiny, 50-pound white-tailed deer; tells something of their habits; speculates on their origin; and gives plans for a refuge to save them from extinction.

BARICK, FRANK B. Progress report on big game restoration. Wildlife in North Carolina 15(7): 8-10, 22, illus. July 1951.
An account of the stocking of 125 white-tailed deer on 3 new refuges in North Carolina in 1950-51.

DASMANN, WILLIAM P. New trends in deer management in California. Journal of Range Management 3(4): 280. July 1951.
Abstract of a paper prepared for the Fourth Annual Meeting of the American Society of Range Management.

INTERSTATE DEER HERD COMMITTEE. The Devils Garden deer herd. California Fish and Game 37(3): 233-272, illus. July 1951.
This is the fifth report on the herd of mule deer that summers principally on the Fremont National Forest in Oregon and winters on the Devils Garden area of the Modoc National Forest in California. It discusses the size and the composition of the herd, its food, the range, a program for reducing livestock and deer, the antlerless deer hunt, productivity and harvest, and range improvements.

MAMMALS--BIG GAME (DEER)--Continued

JULANDER, ODELL and ROBINETTE, W. LESLIE. Deer--harvest or starve them? Utah Fish and Game Bulletin 8(8): 3-5, 7, illus. May 1951.
The situation in Utah.

McKEAN, WM. Harvesting big game. North Dakota Outdoors 14(3): 8-9, 15, illus. September 1951.
Under North Dakota conditions, planned hunting can produce more deer.

OLSEN, O. WILFORD, and TOLMAN, C. D. Wellcomia evaginata (Smith, 1908) (Oxyuridae: Nematode) of porcupines in mule deer, Odocoileus hemionus, in Colorado. Proceedings of the Helminthological Society of Washington 18(2): 120-122, illus. July 1951.

PALMER, RALPH S. The whitetail deer of Tomhegan Camps, Maine, with added notes on fecundity. Journal of Mammalogy 32(3): 267-280, illus. August 1951.
Records of reproduction and other life history information from several sources, but mainly data on a few deer observed over a period of years at a camp near Moosehead Lake in Maine. One doe produced 31 fawns in 14 years, including 6 known sets of twins and 5 of triplets.--Lloyd W. Swift.

QUICK, RALPH H. The technician's place in this job of conservation. West Virginia Conservation 15(3): 5-10, 41. June 1951.
An outline of the white-tailed deer problem in West Virginia, with recommendations for its solution based on experiences there and in several other states.

ROBB, DUNBAR. Missouri's deer herd. 36 pages, illus. Missouri Conservation Commission. Jefferson City, Mo. 1951.
History of the whitetail in Missouri, early restoration (1937-44), recent management (1944-50), life history, land use relationships, hunting. Illustrations include range maps, and drawings of antler and tooth anatomy and growth.

ROBINETTE, W. LESLIE and JENSEN, WALLACE. A simplified method for determining the age of mule deer. 5 pages, illus. Utah State Department of Fish and Game, Department Information Bulletin No. 1. October 1950.
Pictures and describes the teeth of 5 age classes of mule deer.

ROSEN, M. N., and others. An epizootic of foot rot in California deer. Transactions of the Sixteenth North American Wildlife Conference. Pages 164-178, illus. 1951.
Epizootics of this disease have been observed in deer in California since 1924. The authors review its occurrence in California and give details of epizoology of more recent outbreaks. In California 3 syndromes are recognized: external lesions on the feet, or foot rot; necrotic stomatitis, or ulcers of the mouth; and ulcers in the stomach. Abcesses on internal organs, particularly the liver, also have been noted. There is a definite seasonal incidence, infections occurring during the summer and reaching a peak in August. The most severe outbreaks have occurred in dry years. Spring development and range management are discussed as possible means of control. --C. M. Herman.

MAMMALS--BIG GAME (DEER)--Continued

SIEGLER, HILBERT R. Has the lack of a buck law harmed New Hampshire's deer herd? Transactions of the Sixteenth North American Wildlife Conference. Pages 472-491, illus. 1951.

After carefully evaluating conditions, the author concludes that the lack of a buck law has in no way harmed the herd.

TOLMAN, CON. Are we prepared to restore the winter deer ranges? Colorado Conservation, December 1950. Pages 20-22, illus.

MAMMALS--BIG GAME (ANTELOPE & ELK)

ARRINGTON, O. N. and EDWARDS, ALFRED E. Predator control as a factor in antelope management. Transactions of the Sixteenth North American Wildlife Conference. Pages 179-190, illus. 1951.

In Arizona, between 1944 and 1950, antelope fawn crops on 5 management units ".....corresponded closely with the amount and type of predator-control work done in each."

COONEY, ROBERT F. Elk management problems. Journal of Range Management 3(4): 279-280. July 1951.

Abstract of a paper prepared for the Fourth Annual Meeting of the American Society of Range Management. It deals with conditions in Montana.

McCORMACK, ROGER J. A population study of the South Cache elk herd. M.S. thesis, Utah State Agricultural College. 1951.

MAMMALS--BIG GAME (CARIBOU & MOOSE)

BANFIELD, A. W. F. The barren-ground caribou. 56 pages, illus. Canada Department of Resources and Development, Ottawa. 1951.

The author discusses environment, history of the populations, summer and winter ranges, migration, morphology, food, individual and group behavior, vital statistics, growth, pathology, accidents, ecology, wolf predation, human use, and the human population in the caribou range. On an area of 600,000 square miles caribou are almost an essential to human life. The present population of about two-thirds of a million animals has been decreasing from year to year. The kill must be controlled to prevent further reduction.

BASSETT, NEIL R. Winter browse utilization and activities of moose on the Snake and Buffalo Bottoms of Jackson Hole, Wyoming. M.S. thesis, Utah State Agricultural College. 1951.

MAMMALS--BIG GAME (CARIBOU & MOOSE)--Continued

de VOS, A. and PETERSON, RANDOLPH L. A review of the status of woodland caribou (Rangifer caribou) in Ontario. Journal of Mammalogy 32(3): 329-337, illus. August 1951.

From review of literature, sight records, and trend information the authors conclude that the caribou in Ontario are now much reduced in range and number, and that "South of a Lake Abitibi-Lake Nipigon line it seems almost certain that there are no more than approximately three or four hundred caribou remaining. North of that line it seems likely that there are at least 1,000 animals, and possibly two or three times that number. In other words, on the basis of available information, the present caribou populations might be estimated at between 1300 and 3000."--Lloyd W. Swift.

HARGRAVE, H. J. Range resources of the far north and the reindeer herd at Aklavik, N. W. T. Journal of Range Management 3(4): 281-282. July 1951.

Abstract of a paper prepared for the Fourth Annual Meeting of the American Society of Range Management.

KREFTING, LAURITS W. What is the future of the Isle Royale moose herd? Transactions of the Sixteenth North American Wildlife Conference. Pages 461-470, illus. 1951.

Between 1936 and 1948 the herd grew to 800. At that time the food supply was depleted; and during the following winter there was widespread mortality. "If the moose are not held in check by some other means than allowing them to stabilize themselves by depleting their food supply, it will be impossible to conserve the island's plant life."

MAMMALS--BIG GAME (BEAR)

FRITZ, EMANUEL. Bear and squirrel damage to young redwood. Journal of Forestry 49(9): 651-652. September 1951.

More than 10,000 young trees in Humboldt County, California have been killed by bears stripping off their bark. The bark has been stripped from pole-size to 30-inch trees up to a point where the diameter is about 4 inches. Squirrels have done considerable damage in 4 counties.

LUTZ, H. J. Damage to trees by black bears in Alaska. Journal of Forestry 49(7): 522-523, illus. July 1951.

Serious stripping of bark from white spruce on the Kenai Peninsula.

MAMMALS--FURBEARERS (GENERAL)

DUSTMAN, EUGENE H. The 1949-50 Ohio fur crop. The Ohio Conservation Bulletin 15(7): 30-32, illus. July 1951.

SCHORGER, A. W. A brief history of the steel trap and its use in North America. Transactions of the Wisconsin Academy of Sciences, Arts and Letters 40(pt.2): 171-199, illus. 1951.

Based on a list of 97 references.

MAMMALS--FURBEARERS (GENERAL)--Continued

WILSON, KEN. State-wide fur survey. Wildlife in North Carolina 15(8): 8-11, 17, illus. August 1951.
Latest information on the status of fur animals in North Carolina.

YEAGER, LEE E. Wild furs, an economic asset in Colorado. Colorado Conservation, March 1951. Pages 7-10, illus.
Worth half a million dollars a year. Muskrats and beaver account for 90% of the total value of the crop.

MAMMALS--FURBEARERS (MUSKRAT)
(See also MAMMALS--FURBEARERS (BEAVER), Conn; BIRDS--WATERFOWL, Bradley & Cook)

FULLER, W. A. Natural history and economic importance of the muskrat in the Athabasca-Peace Delta, Wood Buffalo Park. 82 pages, illus. Canadian Wildlife Service, Wildlife Management Bulletin Series 1, Number 2. March 1951.
A survey begun in 1947 revealed an annual productivity of about 40,000 pelts, making muskrats the most important crop of the area. The nature of the country and climate, coupled with the behavior and reproduction patterns of the muskrats, point to need of more management, but not to the extent required further south.

KNIGHT, IOLA MUSFELDT. Diseases and parasites of the muskrat (Ondatra zibethica) in British Columbia. Canadian Journal of Zoology 29(3): 188-214, illus. June 1951.
This fur bearer is apparently more affected by wounds due to intraspecific strife than by actual disease. Parasites were found in 74% of 205 individuals examined but none were sufficient to produce pathology. Pathological conditions included two pulmonary infections and a tumorlike condition.--C. M. Herman.

McCULLOUGH, ROBERT A. Some studies on the ecology and management of the muskrat on the Locomotive Springs Migratory Waterfowl Refuge, Box Elder County, Utah. M.S. thesis, Utah State Agricultural College. 1951.

SAUNDERS, EDWARD V. Reactions of the Rocky Mountain muskrat (Ondatra zibethica osoyoosensis) to drought conditions at Ogden Bay Migratory Waterfowl Refuge, Utah. M.S. thesis, Utah State Agricultural College. 1951.

MAMMALS--FURBEARERS (BEAVER)

BAILEY, R. WAYNE and STEPHENS, R. F. Effects of beavers on fish. West Virginia Conservation 15(6): 11-16, 26, illus. September 1951.
Beaver dams may cause trout to increase or decrease. Suckers, chubs, minnows, and amphibians may become abundant in warmer streams and furnish food for bass, mink, coons, herons, etc. Muskrats, ducks, woodcock, and deer usually profit from beaver activities.

MAMMALS--FURBEARERS (BEAVER)--Continued

CONN, HUGH R. Federal aid in fur-resources management in Canada. Transactions of the Sixteenth North American Wildlife Conference. Pages 437-443. 1951.
An account of successful management of beaver and muskrats in Manitoba, Saskatchewan, Ontario, and Quebec, beginning in 1936.

PIETSCH, LYSLE R. Beaver upswing in many Illinois areas. Outdoors in Illinois 18(2): 12-13, 39, illus. Spring 1951.

MAMMALS--FURBEARERS (MUSTELIDS)

de VOS, ANTOON. Recent findings in fisher and marten ecology and management. Transactions of the Sixteenth North American Wildlife Conference. Pages 498-505, illus. 1951.
These species were studied in Ontario from 1948 to 1951. Both are practically absent from recently logged and burned-over areas, but the fisher occurs in second-growth forest. Marten restocking in 1950 apparently was successful. A well-regulated trapping season may result in an increase of both species.

LIERS, EMIL. My friends the land otters. Natural History 60(7): 320-326, illus. September 1951.
An entertaining account of the behavior of partly domesticated otters.

MARSHALL, WILLIAM H. An age determination method for the pine marten. The Journal of Wildlife Management 15(3): 276-283, illus. July 1951.
The skulls of mature females have sagittal crests, while the skulls of immature females lack them. The skulls of mature males have sagittal crests more than 20 mm. long, while the skulls of immature males have shorter crests or none at all.

MUSGROVE, BILL F. Weasel foraging patterns in the Robinson Lake area, Idaho. The Murrelet 32(1): 8-11, illus. January-April 1951.

QUICK, HORACE F. Notes on the ecology of weasels in Gunnison County, Colorado. Journal of Mammalogy 32(3): 281-290. August 1951.
Studies on the habits of long-tailed weasels included observations on wild and captive animals. Scat samples from 5 life zones indicated voles as the most frequently selected prey, with deer mice and chipmunks next. Hunting habits, and especially the kill phase, were studied in a large cage having earth floor, rocks, and brush. "Experiments with three captive weasels indicated that four mice per day for each weasel would sustain them in apparent health." Weasel density in the county was estimated to be 2 per square mile.--Lloyd W. Swift.

MAMMALS--FURBEARERS (COYOTE & FOXES)

ELTON, CHARLES. Movements of arctic fox populations in the region of Baffin Bay and Smith Sound. The Polar Record 5(37,38): 296-305, illus. January-July 1949.

MAMMALS--FURBEARERS (COYOTE & FOXES)--Continued

HALLER, FRANK D. Fox facts. Outdoor Indiana 18(9): 2, 19, illus. September 1951.
Summarizes winter and spring foods of Indiana red foxes and winter foods of Indiana gray foxes, and discusses the bounty and population trends.

LAMPIO, TEPPO. On the significance of predators in the control and dispersal of the diseases of game. Papers on Game Research 6: 3-20, illus. 1951.
The author makes a number of generalizations concerning the relation of predators to the spread or control of diseases in game species. He presents some interesting data on his observations of the abundance of fox populations in relation to lung worm, eczema, and cysticercus in hares in Finland. He concludes that the fox is not a factor either in the control or spread of these diseases, not even the cysticercus.--C. M. Herman.

MURIE, ADOLPH. Coyote food habits on a southwestern cattle range. Journal of Mammalogy 32(3): 291-295. August 1951.
The author's summary states "From February, 1943, to July, 1944, 3981 coyote scats were collected on the cattle ranges of the San Carlos Indian Reservation. The incidence of the food items in the scats was as follows: cattle remains [mostly carrion] were found in 16 per cent of the scats, rodents and rabbits in 12 percent,.....juniper berries in 68 per cent....." "The food habits of the coyote were characterized by the extraordinarily large amount of vegetation eaten. The high incidence of vegetation in the diet was apparently due to a scarcity of flesh foods such as rodents and rabbits."--Lloyd W. Swift.

SWITZENBERG, D. F. Examination of a state fox bounty. The Journal of Wildlife Management 15(3): 288-299, illus. July 1951.
In Michigan in 1947, payment of a bounty apparently resulted in a 26% greater kill--principally through trapping--than would have occurred without it. An increased kill of small game in 1948-49 apparently did not result from reduction in fox numbers, so the cost of the bounty for 1947 did not seem justified.

MAMMALS--FURBEARERS (RACCOON, ETC.)

HAMILTON, W. J., JR. The food of the opossum in New York State. The Journal of Wildlife Management 15(3): 258-264. July 1951.
More than 60% of the stomach contents of 129 animals taken from May through October were insects, fruit, amphibians, and mammals. Nearly 60% of the stomach contents of 51 amimals taken in late fall were mammals, fruit and berries, and earthworms. 80% of the stomach contents of 58 raccoons taken in late fall from the same area were grains, mammals, fruits and berries, amphibia, and insects.

HAMILTON, W. J., JR. Warm weather foods of the raccoon in New York State. Journal of Mammalogy 32(3): 341-344. August 1951.
Plant material occurred in 74.5% of 94 raccoon stomachs taken from April to October, and made up 58.7% of the total volume of food. Animal remains occurred in 67% and made up 41.1% of the volume.--Lloyd W. Swift.

MAMMALS--FURBEARERS (RACCOON, ETC.)--Continued

POLLACK, E. MICHAEL. Observations on New England bobcats. Journal of Mammalogy 32(3): 356-358. August 1951.

The preferred habitat seems to be a mixture of hardwoods and conifers. A check of 14 trails suggested that 2 to 5 miles is traveled on a night's hunt. There are comments on hunter (including bounty) kill, disease, and related factors.--Lloyd W. Swift.

SANDERSON, GLEN C. Breeding habits and a history of the Missouri raccoon population from 1941 to 1948. Transactions of the Sixteenth North American Wildlife Conference. Pages 445-460, illus. 1951.

MAMMALS--RODENTS (GENERAL)

CALHOUN, JOHN B., editor. Annual report of census made in 1950. North American Census of Small Mammals, Release No. 4. 136 pages. June 1951.

MAMMALS--RODENTS (MICE & RATS)

BLAIR, W. FRANK. Population structure, social behavior, and environmental relations in a natural population of the beach mouse (Peromyscus polionotus leucocephalus). Contributions from the Laboratory of Vertebrate Biology, Number 48. 47 pages, illus. June 1951.

This study was made on Santa Rosa Island, Florida from November 1941 to January 1942 and from May to June 1942.

DAVIS, DAVID E.; BROWN, ROBERT Z.; and JACKSON, WILLIAM B. The effect on mouse populations of sprinkling industrial effluent in an oak woods. Transactions of the Sixteenth North American Wildlife Conference. Pages 283-288, illus. 1951.

Effluent from a frozen-food plant in New Jersey is being spread through large sprinklers at the rate of 450-700 inches of rain in 6 months. During the first summer this had no apparent effect on the population of white-footed mice.

LINSDALE, JEAN M. and TEVIS, LLOYD P., JR. The dusky-footed wood rat: a record of observations made on the Hastings Natural History Reservation. 664 pages, illus. University of California Press, Berkeley, Calif. 1951. $7.50.

Like Dr. Linsdale's monumental volume on the California ground squirrel, this book is the result of years of study by a staff of observers. It is based on histories of 580 individuals. Chapter headings include: houses, animal associates, behavior, food, reproduction, morphology, and population. The scope is far more extensive than these headings imply, since almost everything observable pertaining to the species, including pathology, is treated exhaustively. Emphasis, however, is on behavior of individuals and factors influencing it. Presentation is largely through detailed narration of selected incidents and individual histories. There are summaries of certain chapters or sections, and a brief chapter of conclusions.--W. H. Stickel.

SANDS, DANIEL E. A study of the Allegheny wood rat in central Pennsylvania. M.S. thesis, The Pennsylvania State College. 1951.

MAMMALS--RODENTS (SQUIRRELS, ETC.)
(See also MAMMALS--BIG GAME (BEAR), Fritz)

ALLEN, JOHN M. What about the squirrel season? Outdoor Indiana 17(9): 14-15, 19, illus. September 1950.
An opening date for hunting needs to consider the welfare of the squirrels and the wishes of the hunters. In Indiana, following a year of good mast production gray and fox squirrels commonly have 2 litters, with the young of the second weaned by the middle of August. Following a year of poor mast production, young of the one litter may not be weaned until September.

GRIZZELL, ROY A., JR. Life history, ecology, and management of the southern woodchuck. Ph.D. thesis, University of Michigan. 1951.

HOWARD, WALTER E. and INGLES, LLOYD G. Outline for an ecological life history of pocket gophers and other fossorial mammals. Ecology 32(3): 537-544. July 1951.

LISCINSKY, STEPHEN A. The life history and habitat of the northern gray squirrel in relation to some plant communities in Centre County, Pennsylvania. M.S. thesis, The Pennsylvania State College. 1951.

REDMOND, HOWARD R. Squirrel conditions in Mississippi. Mississippi Game & Fish 14(10): 4-7, 10-11, illus. April 1951.
The squirrel population in Mississippi has gradually declined in recent years. "With proper forest management and biologically sound hunting practices, the squirrel in Mississippi will continue to maintain its position as the number one game species....."

MAMMALS--RABBITS
(See also MAMMALS--FURBEARERS (COYOTE & FOXES), Lampio)

CHEATUM, E. L. and BUNTING, HENRY. Malignant neoplasms in varying hares (Lepus americanus virginianus). The Cornell Veterinarian 41(2): 136-140, illus. April 1951.
Two animals from an experimental breeding population are reported to have died from malignancy. The tumors are described in detail.--C. M. Herman.

HANDLEY, C. O. Two basic things in rabbit and quail management. West Virginia Conservation 15(5): 20-24, illus. August 1951.
They need (1) a home that will provide food and protection throughout the year and (2) preservation of breeding stock.

LAHERMAA, G. Investigations on the lung-worm disease of the hare. Papers on Game Research 6: 47-59, illus. 1951.
Reports an epizootic in the snow hare (Lepus timidus) during 1947-1950. Almost all hares examined were infected with Protostrongylus commutatus, the adults of which are 2-4 cm. in length and live in the bronchioles of the lung. Actual deaths due to these infections could not be demonstrated. At the same time in Finland rather severe failure of game occurred, but other more general factors than lung-worm disease may have been responsible for the hare failure. The author suggests that a minimum associated with the 10-year fluctuation may be involved.--C. M. Herman.

MAMMALS--RABBITS--Continued

LAMPIO, TEPPO. On the occurrence of the bladder-worm (Cysticercus pisiformis) in Finland. Papers on Game Research 6: 32-39, illus. 1951.

Traces the occurrence of this parasite in hares and its distribution from 1879 to the present time. Early records, prior to 1928, are based on publications in hunting journals of the country. In more recent years the data were obtained from questionnaires sent to hunters by the Finnish Hunter's Association and the Finnish Foundation for Game Preservation. 17 years were classified as "healthy years", 24 years as transition, and 26 as bladder-worm years. The distribution and density of the dog population (final host of the parasite) is shown to have some relationship to the problem. Diligence on the part of hunters in not feeding infected hares to their dogs and the use of vermifuges probably contribute to reduction of infection in the hare population.--C. M. Herman.

NEAL, RICHARD KEITH. Cottontail population, movement and mortality study in central Pennsylvania. M.S. thesis, The Pennsylvania State College. 1951.

OSMER, TOM. Old orchards help rabbits. Michigan Conservation 20(5): 9-10, 29. September-October 1951.

Old orchards on state game areas in Michigan were planted with clusters of pine and clusters of multiflora rose; and some of the apple trees were lopped and vines planted around their tops. Rabbits have increased. Where adjacent food patches have been planted they have increased still more.

RATCLIFFE, F. N. The rabbit problem--a survey of research needs and possibilities. Commonwealth Scientific and Industrial Research Organization, Melbourne, Australia. 17 pages. 1951.

The introduced rabbit probably is Australia's most serious and important agricultural pest. Reduction in numbers is easily achieved by various methods of attack in many areas; but eradication, even in limited local areas, presents a problem much more difficult to solve. As an approach to biological control much study and experimentation has been applied to the use of the virus disease, myxomatosis. This disease is transmitted by mosquitoes and is a promising control tool, at least in the vicinity of watercourses. Fumigants, mechanical destruction of warrens, poisons, and fencing have shown some value under proper local conditions and application. In a discussion of bait bases and lures, the author points out that "It is impossible for a biologist to share the popular optimism about the prospect of discovering a lure or odour that would attract a high percentage of a rabbit population to baits when their nutritional needs were being well satisfied". Of all the methods of rabbit destruction available, poisoning seems to stand most in need of scientific study and clarification.--C. M. Herman.

MAMMALS--INSECT-EATERS

(See MAMMALS--RODENTS (GENERAL), Calhoun)

MAMMALS--MARINE
(See also FISHES, Felin & Marr)

BONNOT, PAUL. The sea lions, seals and sea otter of the California coast. California Fish and Game 37(4): 371-389, illus. October 1951.
Habits and history of populations of 7 species, illustrated with attractive drawings and photos.

FISHER, H. D. Seals of the Canadian east coast. 4 pages, illus. Fisheries Research Board of Canada, Atlantic Biological Station, General Series No. 18. September 1950.
4 species of hair seal are common, 2 rare. Of the common ones, 2 are migratory and valuable for fur, 2 are resident and damage the fisheries. There are drawings of the common species and of their distinctive lower jaws.

HAMILTON, ANDREW. Is the Guadalupe fur seal returning? Natural History 60(2): 90-94, illus. February 1951.
In 1950 a single Guadalupe fur seal was found on San Nicolas Island, California. None could be found on Guadalupe Island, Mexico, where they formerly bred in large numbers; but this may not be the only surviving individual of the species.

JONES, ROBERT D., JR. Present status of the sea otter in Alaska. Transactions of the Sixteenth North American Wildlife Conference. Pages 376-382. 1951.
An interesting account of habits and populations. The first step in management is believed to be the restocking of portions of former range.

BIRDS--BEHAVIOR

LOWERY, GEORGE H., JR. A quantitative study of the nocturnal migration of birds. University of Kansas Publications, Museum of Natural History 3(2): 361-472, illus. June 1951.
In the spring of 1948 observers at more than 30 stations from Yucatan to California and Ontario spent more than 1000 hours observing through telescopes the birds that passed before the moon. Their observations are the basis for the author's conclusion that "Telescopic counts of birds passing before the moon may be used to determine reliable statistical expressions of the volume of migration in terms of direction and of definite units of time and space."

RINEY, THANE. Relationships between birds and deer. The Condor 53(4): 178-185. July-August 1951.
Based on observations in the Sierra Nevada between 1947 and 1950. Eagles occasionally take mule deer fawns, various birds use deer hair as nesting material, and birds apparently pick ectoparasites from deer. Birds alert deer to danger and quiet them after they have been disturbed.

BIRDS--DISEASES

BRANDLY, C. A. Poultry diseases as public health problems. Public Health Reports 66(21): 668-672. May 25, 1951.
Of interest because of possible similar relationship among wild birds. 21 references.--C. M. Herman

BIRDS--FAUNAS & MANUALS

CRUIKSHANK, ALLAN D. Summer birds of Lincoln County, Maine. 51 pages, illus. National Audubon Society, 1000 Fifth Ave., New York. 1950. 50¢ (copied from The Wilson Bulletin for June 1951, page 125).

HEADSTROM, RICHARD. Birds' nests of the West, a field guide. 177 pages, illus. Ives Washburn, Inc., New York. 1951. $3.00.
"An identification manual to the nests of birds of the United States west of the one hundredth meridian."

HENDRICKS, BARTLETT. Berkshire birds. 57 pages, illus. Massachusetts Audubon Society, Boston. 1950. 60¢ (copied form The Wilson Bulletin for June 1951, page 127).
See page 33 of Wildlife Review No. 60 for an abstract of this work as it was first published in The Bulletin of the Massachusetts Audubon Society.

PACKARD, FRED MALLERY. The birds of Rocky Mountain National Park. 81 pages, illus. [Rocky Mountain] Nature Association, Estes Park, Colo. 1950. 75¢ (copied from The Wilson Bulletin for June 1951, page 127).

PETERS, JAMES LEE. Check-list of birds of the world. Volume VII. 318 pages. Museum of Comparative Zoölogy, Cambridge, Mass. 1951. $6.00.
Comprises 6 families of Passeriformes, none of the western hemisphere species occurring north of Mexico.

WOOD, NORMAN A. The birds of Michigan. 559 pages, illus. Museum of Zoology, University of Michigan, Miscellaneous Publications No. 75. August 1951. $4.00.
Detailed information on seasonal and areal occurrence of more than 300 species.

BIRDS--POPULATIONS

HOWELL, JOSEPH C. The roadside census as a method of measuring bird populations. The Auk 68(3): 334-357, illus. July 1951.
The author made careful observations in Knox County, Tennessee on the conditions involved with different species, seasons, times of day, and habitats.

BIRDS--WATERFOWL
(See also BIRDS--FISH-EATERS, Tener; BIRDS--UPLAND GAME (GENERAL), Salter)

ANONYMOUS. Waterfowl conservation in the lower San Joaquin Valley: its relation to the Grasslands and Central Valley Project. 123 pages, illus. United States Department of the Interior, Washington 25, D. C. October 1950.

Report on a joint study in 1948 and 1949 by the Fish and Wildlife Service, the Bureau of Reclamation, and the California Division of Fish and Game. The Grasslands, upon which this study is concentrated, is an area of about 100,000 acres west of the San Joaquin River, and mostly in Merced County, on which water rights belong to the Federal Government's Central Valley Project. The report proposes that water supplies be developed to expand and maintain the Los Banos State Waterfowl Refuge, to maintain a proposed Federal waterfowl management area east of the San Joaquin River, and to perpetuate waterfowl habitat in other portions of the Grasslands area under private ownership.

BELLROSE, FRANK C. Effects of ingested lead shot upon waterfowl populations. Transactions of the Sixteenth North American Wildlife Conference. Pages 125-133, illus. 1951.

A large series of live-trapped mallards was examined by fluoroscopy during the fall of 1949 and 1950 at a laboratory near Havana, Illinois. The percentage of birds containing ingested pellets increased from 3-4% prior to the hunting season to about 12% in early December. In an examination of the gizzards of ducks taken in 7 regions of the United States in the fall and winter of 1937-1950 the percentage of gizzards with shot was noticeably lowest from the Great Plains region (2.72%) and highest from the South Atlantic Coast region (12.67%). In a series of 18,454 ducks of 12 species an average of 6.57% contained ingested shot. In the diving ducks the greatest percentage was in redheads, among puddlers in the pintail. In 1950, 392 mallards fed no shot, 392 fed 1 shot, and 392 fed 2 shot were banded and released. In the few birds from which return records were obtained there were more of those with 2 shot; and the controls averaged the greatest number of miles per day travelled.--C. M. Herman.

BELLROSE, FRANK C. and CHASE, ELIZABETH BROWN. Population losses in the mallard, black duck, and blue-winged teal. 27 pages. Illinois Natural History Survey, Biological Notes No. 22. 1950 (copied from Bird-Banding for July 1951, page 130).

A review by D. S. Farner says, in part: "This paper is a significant study on the population dynamics of ducks. The basic data are from ducks taken by hunters at Lake Chautauqua and McGinnis Slough in Illinois [1940-1945]; a correction is applied in order to obtain a true value for the loss in birds of the year by shooting."

BRADLEY, BEN O. and COOK, ARTHUR H. Small marsh development in New York. Transactions of the Sixteenth North American Wildlife Conference. Pages 251-264, illus. 1951.

The authors describe the construction of small impoundments and their production of waterfowl and muskrats. 34 areas were developed in 1949 and 1950. 6 of these are described.

BIRDS--WATERFOWL--Continued

CHRISTIANSEN, M., and MADSEN, HOLGER. Eimeria bucephalae n. sp. (Coccidia) pathogenic in goldeneye (Bucephala clangula L) in Denmark. Danish Review of Game Biology 1(2): 63-73, illus. Copenhagen 1948.

COLLS, D. G. The conflict between waterfowl and agriculture. Transactions of the Sixteenth North American Wildlife Conference. Pages 89-93. 1951.
Conditions in the Prairie Provinces of Canada.

COTTAM, CLARENCE. Waterfowl's future depends upon management. Transactions of the Sixteenth North American Wildlife Conference. Pages 109-117. 1951.
Waterfowl need much more effective public support, restoration of breeding grounds and wintering areas, development of refuges and managed public hunting areas, and control of hunting by flyways.

GLOVER, FRED A. Spring waterfowl migration through Clay and Palo Alto Counties, Iowa. Iowa State College Journal of Science 25(3): 483-492, illus. April 1951.
"The total number of waterfowl on the lakes and marshes of Clay and Palo Alto counties in 1949 was about 26 per cent more than in 1948 but only about 20 per cent of the total for 1934, 1938, or 1942." "The sex ratio trend and the per cent of paired waterfowl during the spring migration are presented for 14 species of ducks."

HANSEN, HENRY A. and OLIVER, WENDELL H. The status of resident Canada geese in south-central Washington, spring, 1950. The Murrelet 32(1): 2-7, illus. January-April 1951.
150 miles of the Columbia River had about 1500 breeding and 1000 non-breeding birds.

HERMAN, CARLTON M. Blood parasites from California ducks and geese. The Journal of Parasitology 37(3): 280-282. June 1951.
First report of mosquito-borne malaria in native North American ducks.--C. M. Herman.

LEITCH, WILLIAM G. Saving, maintaining, and developing waterfowl habitat in western Canada. Transactions of the Sixteenth North American Wildlife Conference. Pages 94-99. 1951.

MILLS, HARLOW B. Facts and waterfowl. Transactions of the Sixteenth North American Wildlife Conference. Pages 103-109. 1951.
The author asks many questions, emphasizing things we do not know and the interpretation and application of things we think we know. He asks for more and better facts about waterfowl and concludes: "It is going to take a lot of broad-minded people in positions of responsibility and a great measure of imagination among research people to get the facts we need."

BIRDS--WATERFOWL--Continued

MORSE, JOHN . Kentucky Lake waterfowl investigation. 57 pages, illus. Kentucky Division of Fish and Game, Frankfort, Ky. November 1950.
Report of a study in 1946-48 of waterfowl and their management on the west side of the Kentucky portion of this TVA reservoir. Water was first impounded in 1944, and waterfowl use was heavy that year. Since then it has been very light. The small amount of plant food is the most serious limiting factor. Any great improvement would necessitate changes in the Tennessee Valley's water control practices.

MURDY, RAY. We harbor ducks. South Dakota Conservation Digest 18(6): 2-3, 7, illus. June 1951.
South Dakota's 1950 breeding season population was 600,000 ducks--an average of 4 pairs per square mile over the entire State. The very numerous potholes and sloughs in the eastern part of the State and stock ponds in the western part are the key to this large population.

ODIN, CLYDE R. The effect of predation by California gulls (Larus californicus) on waterfowl production. M.S. thesis, Utah State Agricultural College. 1951.

PAYNTER, RAYMOND A., JR. Clutch-size and egg mortality of Kent Island eiders. Ecology 32(3): 497-507, illus. July 1951.
In 1948, 150-acre Kent Island in southern New Brunswick had an estimated 750 eider nests. 29% of those studied produced young.

PETRIDES, GEORGE A., and BRYANT, CHARLES R. An analysis of the 1949-50 fowl cholera epizootic in Texas Panhandle waterfowl. Transactions of the Sixteenth North American Wildlife Conference. Pages 193-216. 1951.
Cholera was first observed in waterfowl in western Texas in the winter of 1944. The heaviest losses occurred during the winter of 1947-48 when an estimated 36,000 waterfowl died. During the winter of 1949-50 over 4,400 waterfowl succumbed to the disease. At the peak of population, January 7, there were an estimated 700,000 ducks in the area under study. The bulk of the losses occurred among mallards, pintails, and baldpates. Various relationships of population density, weight, water levels, weather conditions, and diet are discussed. Possible sources of infection include diseased chickens, rodents, and chronic infections or carriers among wild waterfowl. Of several control measures suggested, some are economically not feasible and others require further experimentation and analysis.--C. M. Herman.

RYDER, RONALD A. The San Luis Valley--a Colorado waterfowl factory. Colorado Conservation, March 1951. Pages 22-25, illus.

SPENCER, DAVID L.; NELSON, URBAN C.; and ELKINS, WINSTON A. America's greatest goose-brant nesting area. Transactions of the Sixteenth North American Wildlife Conference. Pages 290-295. 1951.
The Yukon-Kuskokwim Delta in western Alaska, an area of 20,000 square miles, produces a large portion of all cackling geese and black brant, and large numbers of several other species of geese and ducks.

BIRDS--WATERFOWL--Continued

VAN CLEAVE, HARLEY J., and RAUSCH, ROBERT L. The acanthocephalan parasites of eider ducks. Proceedings of the Helminthological Society of Washington 18(1): 81-84. January 1951.

WILLIAMS, CECIL. Objectives and plans for waterfowl research and management in the Northern Rocky Mountain Region. Wyoming Wild Life 15(7): 10-13, 33-34, illus. July 1951.

WINGFIELD, BILLY HILLMAN. A waterfowl productivity study in Knudson Marsh, Salt Lake Valley, Utah. M.S. thesis, Utah State Agricultural College. 1951.

BIRDS--FISH-EATERS
(See also BIRDS--WATERFOWL, Odin; FISHES, Felin & Marr)

ALEXANDER, W. B. The index of heron population, 1950. British Birds 44(4): 123-126, illus. April 1951.
Reports on 207 heronries. In most areas there were more nests than in 1949.

MADSEN, F. JENSENIUS and SPÄRCK, R. On the feeding habits of the southern cormorant (Phalacrocorax carbo sinensis Shaw) in Denmark. Danish Review of Game Biology 1(pt. 3): 45-75, illus. 1950.
Of 365 birds killed in 1942-48, 258 contained recognizable food remains. The commonest foods were herrings, eels, viviparous blennies, and cods. Although many commercially important fishes were eaten the effect on the fisheries was judged to be very slight.

TENER, JOHN S. Sixth census of non-passerine birds in the bird sanctuaries of the north shore of the Gulf of St. Lawrence. The Canadian Field-Naturalist 65(2): 65-68. March-April 1951.
This census of 10 sanctuaries compares 1945 and 1950 populations of 23 species, mostly water birds.

BIRDS--RAILS

STEWART, ROBERT E. Clapper rail populations of the Middle Atlantic States. Transactions of the Sixteenth North American Wildlife Conference. Pages 421-430, illus. 1951.
This study, in the summer of 1950, was based on the nesting population of a 47-acre tract of saltmarsh cordgrass at Chincoteague, Virginia. 80% of 79 occupied nests were located in tall saltmarsh cordgrass near the tidal creeks. Hatching success was very high. 198 birds were trapped and banded during August.

BIRDS--SHOREBIRDS

EAST, BEN. Enjoy them while they last. Natural History 60(7): 327-334, illus. September 1951.
A vivid history of the decline of North American shorebirds under heavy gunning. Now the same thing is happening to many of Alaska's game animals.

LONGWELL, JOHN R. A study of the American woodcock on a selected area in central Pennsylvania. M.S. thesis, The Pennsylvania State College. 1951.

TERRILL, LEWIS McI. Shore bird migration at Montreal. The Canadian Field-Naturalist 65(3): 87-98. May-June 1951.
Notes on 32 species.

BIRDS--UPLAND GAME (GENERAL)

BEARD, ELIZABETH B. and CHASE, WARREN W. Outline of upland game bird management. 143 pages. The Overbeck Co., Ann Arbor, Mich. 1951. $3.00.
"The outline is designed to introduce the student to the major aspects of upland game bird management and to acquaint him with some of the more important pertinent literature." It treats separately 23 species (grouse, quail, partridges, doves, pheasant, turkey, woodcock).

BUMP, GARDINER. Game introductions--when, where, and how. Transactions of the Sixteenth North American Wildlife Conference. Pages 316-324, illus. 1951.
".....common sense dictates the present all-out effort to increase habitat productivity. But there are many habitats which have been so thoroughly changed by man that native game species can no longer maintain themselves therein in numbers sufficient to provide good hunting." The author discusses when and where introductions may be desirable, the selection of a species, and the essentials of a planned trial introduction.

MADSEN, HOLGER. Studies on species of Heterakis (Nematodes) in birds. Danish Review of Game Biology 1(3): 1-43, illus. Copenhagen 1950.
Discusses the taxonomy of the genus and its occurrence in Danish game birds; and includes a check list of the species, as well as a host list. An extensive bibliography of 125 titles is included.--C. M. Herman.

SALTER, ROBERT L. Status of upland game birds, waterfowl, presented in report of Bird Division. Idaho Wildlife Review 4(1): 6-9, 12, illus. September-October 1951.
Chinese pheasant, 4 species of quail, Hungarian partridge, 5 species of grouse, chukar, game farms, waterfowl, habitat development.

BIRDS--UPLAND GAME (BOBWHITE)
(See also MAMMALS--RABBITS, Handley)

HARPER, THOMAS A. Vitamin A and survival of bobwhite quail. M.S. thesis, The Pennsylvania State College. 1951.

BIRDS--UPLAND GAME (BOBWHITE)--Continued

MURPHY, DEAN ALLEN. Mobility of bobwhite quail in central Missouri. M.A. thesis, University of Missouri. 1951.

REEVES, MAURICE C. Wanted: ragweeds and sassafras. Outdoor Indiana 18(4): 16-17, illus. April 1951.

A summary of fall quail foods in southern Indiana. Corn, sassafras, Korean lespedeza, and ragweed are the most important (more than 70% of the total volume in 831 crops).

BIRDS--UPLAND GAME (PHEASANT)

CHRISTISEN, DONALD M. History and status of the ring-necked pheasant in Missouri. 66 pages, illus. Conservation Commission, State of Missouri, Jefferson City, Mo. May 1951.

The investigation reported upon was made between September 1946 and June 1949. Missouri is marginal pheasant range. The author outlines possible courses of management.

HANSON, WILLIAM R. Some observations on pheasant winter distribution and cover types. North Dakota Outdoors 13(4): 12-14, illus. October 1950.

This study was made in the winter of 1949-1950 in 2 areas: one in northern, the other in southwestern, North Dakota. In the northern area pheasant distribution depended on suitable cover. In the southwestern area it was influenced somewhat by foods available around farmsteads.

HART, CHESTER M.; JONES, FRED L.; and SHAFFER, DALE E. Pheasant cooperative hunting area results, 1950. California Fish and Game 37(4): 395-437, illus. October 1951.

The 10 cooperative areas operated by the California Division of Fish and Game totaled more than 130,000 acres. Game farm birds made up nearly half of the kill. Returns from 13,021 stocked birds were 62%. Seasonal success was greatest on an unstocked area. Damage to property was slight; and approval by hunters and landowners of this second year of cooperative hunting was high.

LUTTRINGER, LEO A., JR. The ringneck pheasant in Pennsylvania. Pennsylvania Game News 22(4): 29-36, illus. July 1951.

McKEAN, JOHN. Oregon's pheasant propagation program. Oregon State Game Commission Bulletin 6(9): 1, 3-5, 8, illus. September 1951.

ROBBINS, OTIS and HENDRICKSON, GEORGE O. Productivity of the ring-necked pheasant in southeastern Iowa, 1950. Iowa Bird Life 21(2): 30-32. June 1951.

BIRDS--UPLAND GAME (PHEASANT)--Continued

ROBY, EDWIN F. A two year study of pheasant stocking in the Gallatin Valley, Montana. The Journal of Wildlife Management 15(3): 299-307. July 1951.

471 game farm pheasants were released at 4 sites in Gallatin County, Montana in 1948-50. "Only 21(4.3 per cent) of the 493 pheasants checked at hunter checking stations in 1949 were game farm birds."

SANDFORT, WAYNE W. Missing legs and broken eggs. Colorado Conservation, March 1951. Pages 3-6, illus.

In Colorado the mowing machine destroys more pheasants than all other causes combined.

SCHWARTZ, CHARLES W. and SCHWARTZ, ELIZABETH REEDER. An ecological reconnaissance of the pheasants in Hawaii. The Auk 68(3): 281-314, illus. July 1951.

This report on the wide-ranging ring-necked pheasant and the more local green pheasant includes detailed accounts of their environment, population densities, food, roosting habits, enemies, and breeding habits.

SMITH, ELDON H. Ringnecks--ups & downs. South Dakota Conservation Digest 18(8): 2-3, 5. August 1951.

Pheasant history in South Dakota from 1891 to 1951. The extremes of the past decade point to the importance of good habitat for good reproduction.

YEAGER, LEE E.; SANDFORT, WAYNE W.; and LYON, L. JACK. Some problems of pheasant management on irrigated land. Transactions of the Sixteenth North American Wildlife Conference. Pages 351-367, illus. 1951.

On a sample township in north-central Colorado, harvesting forage and small grains destroyed more than one-third of the pheasant nests, 7% of the chicks, and more than one-fourth of the nesting hens. The next greatest cause of mortality was bad weather. Other practices that caused serious mortality were grazing and burning. Improvement of nesting and winter cover are the greatest needs.

ZORB, GORDON LESTER. Application of pheasant census methods in Cache County, Utah. M.S. thesis, Utah State Agricultural College. 1951.

BIRDS--UPLAND GAME (GROUSE)

DAVIS, GRANT. A study of the population and biology of the ruffed grouse in central Pennsylvania. M.S. thesis, The Pennsylvania State College. 1951.

HUNGERFORD, K. E. Ruffed grouse populations and cover use in northern Idaho. Transactions of the Sixteenth North American Wildlife Conference. Pages 216-224, illus. 1951.

"Ruffed grouse cover use has been correlated with microclimate study on the 2,200-acre study area in Latah County. There has been a greater correlation with grouse use of various microclimatic zones than with cover types as such."

BIRDS--UPLAND GAME (GROUSE)--Continued

LIGON, J. STOKLEY. Prairie chickens, highways and power lines. New Mexico 29(5): 29. May 1951.
The best prairie chicken habitat in New Mexico is in the sandhills of southern Roosevelt and northern Lea Counties and in Quay and Harding Counties. In 1950 prairie chickens were so scarce that their hunting was prohibited. Highways and power lines are adding increasingly to their mortality.

SHEADS, RICHARD D. A study of the ruffed grouse on the Stone Valley Experimental Forest in Huntingdon County, Pennsylvania. M.S. thesis, The Pennsylvania State College. 1951.

BIRDS--UPLAND GAME (WILD TURKEY, ETC.)

ALCORN, J. R. and RICHARDSON, FRANK. The chukar partridge in Nevada. The Journal of Wildlife Management 15(3): 265-275, illus. July 1951.
5000-10000 chukars have been liberated in Nevada since 1934. They were hunted in the western half of the State in 1948, 1949, and 1950. The chief food of adults appears to be seeds of Bromus tectorum, filaree and pine, and leaves of grass. Roosting is among rocks or in the open. In summer the birds occur only in areas with water.

CRUMP, WILLIAM I. and SANDERSON, H. B. Wild turkey trapping and transplanting. Wyoming Wild Life 5(4): 4-11, 36-37, illus. April 1951.
Trapping in Converse County, Wyoming and in New Mexico in January and February 1951 for transplanting in Crook and Johnson Counties, Wyoming.

WELLS, ROBERT A. More Huns than you think. The New York State Conservationist 6(1): 24-25, illus. August-September 1951.
In 1942, northern New York's St. Lawrence Valley had a Hungarian partridge population estimated at 14,000 birds. In spite of large losses from ice storms during 2 winters, they are now back at about the same level and may be able to stand limited hunting.

BIRDS--UPLAND GAME (DOVES)

QUAY, THOMAS L. Mourning dove studies in North Carolina. 90 pages, illus. North Carolina Wildlife Resources Commission, Raleigh, N. C. 1951.
State-wide field investigations extended from July 1939 to October 1942. They included studies of nesting, cage breeding and rearing, trapping and banding, and populations. 771 nests were studied. Their success was about 50%. Egg laying continued until mid-September.

SCHWARTZ, CHARLES W. and SCWARTZ, ELIZABETH REEDER. Food habits of the barred dove in Hawaii. The Wilson Bulletin 63(3): 149-156, illus. September 1951.

BIRDS--UPLAND GAME (DOVES)--Continued

STABLER, ROBERT M. and HERMAN, CARLTON M. Upper digestive tract trichomoniasis in mourning doves and other birds. Transactions of the Sixteenth North American Wildlife Conference. Pages 145-162, illus. 1951.

A documented review of all known cases in wild birds. Serious losses among mourning doves, particularly during 1950 in the southeastern states, are cited. Evidence is presented that the disease occurs in columbiform birds throughout the United States and could potentially cause tremendous losses in our dove populations. The possibility of this disease being a contributory factor to the demise of the passenger pigeon is conjectured. --C. M. Herman.

THOMPSON, ST. CLAIR. The southeastern cooperative dove study. Transactions of the Sixteenth North American Wildlife Conference. Pages 296-306, illus. 1951.

Collaborating states are Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, and Tennessee. The study has been operating for 2 years. Its objective is to determine population, productivity, hunters' kill, and limiting factors.

UZZELL, P. B. Have whitewings a future? Texas Game and Fish 9(10): 5-7, illus. September 1951.

This year there was a shortage in breeding population and a greatly decreased production of young white-winged doves in southern Texas. Their abilities to recover from a poor breeding season and to withstand shooting is being studied.

BIRDS--HAWKS & OWLS

HECHT, WILLIAM ROBERT. Nesting of the marsh hawk at Delta, Manitoba. The Wilson Bulletin 63(3): 167-176, illus. September 1951.

A study of 11 nests in 1947. Important foods were meadow vole, redwing, yellow-headed blackbird, ground squirrel, young coot, and young muskrat.

SHORTT, ANGUS H. and CARTWRIGHT, B. W. Spare that hawk. Sports Afield 126(2): 43-47, 63, illus. August 1951.

Beautiful drawings of hawks and eagles in flight; with added accounts of appearance, behavior, range, and food.

BIRDS--SONGBIRDS

HAMMER, MARIE. Investigations on the feeding-habits of the house-sparrow (Passer domesticus) and the tree-sparrow (Passer montanus). Danish Review of Game Biology 1(pt. 2): 1-59, illus. 1948.

2657 house-sparrows and 501 tree-sparrows were collected in Denmark between 1941 and 1944. The principal food of adult house-sparrows was oats; although both adults and nestlings ate many insects in the summer and adults ate many weed seeds in the fall. Tree-sparrows ate more weed seeds and insects and much less grain.

BIRDS--SONGBIRDS--Continued

KISSLING, R. E. and others. Recovery of virus of eastern equine encephalomyelitis from blood of a purple grackle. Proceedings of the Society for Experimental Biology and Medicine 77(3): 398-399. July 1951.
In a bird shot in the Manchac Swamp near Ponchatoula, Louisiana, on June 19, 1950.--C. M. Herman.

MANWELL, R. D. Acute malaria in a Canada jay of the high Rockies. The Journal of Parasitology 37(3): 322. June 1951.
Mosquito-borne malaria was found in a jay at 10,000 feet.--C. M. Herman.

MANWELL, REGINALD D. Leucocytozoa and other blood parasites of the purple grackle, Quiscalus quiscala quiscala. The Journal of Parasitology 37(3): 301-306, illus. June 1951.
The occurrence of Plasmodium, Haemoproteus, and Leucocytozoon in grackles is reviewed. These 3 parasites are reported from grackles taken near Syracuse, New York. Evidence is shown of the possibility for incidence of a given parasite to vary not only in different host species or subspecies but also geographically.--C. M. Herman.

MILES, VIRGIL I. and others. Encephalitis in Midwest V. Western equine encephalomyelitis virus recovered from mites Dermanyssus americanus Ewing. Proceedings of the Society for Experimental Biology and Medicine 77(3): 395-396. July 1951.
Mites from English sparrow, Weld Co., Colorado, July 18, 1950.--C. M. Herman.

SOOTER, CLARENCE A. and others. Encephalitis in Midwest IV. Western equine encephalitis virus recovered from nestling wild birds in nature. Proceedings of the Society for Experimental Biology and Medicine 77(3): 393-394. July 1951.
Weld County, Colorado, summer 1950. In a series of birds tested, virus was isolated from 2 red-winged blackbirds, 8-10 days old, and from 1 magpie, 21 days old.--C. M. Herman.

STEWART, ROBERT E., editor. Winter bird-population study. Audubon Field Notes 5(3): 228-240. June 1951.
A report on 24 habitats in Ontario and 12 states.

VAN CLEAVE, HARLEY J., and WILLIAMS, RALPH B. Acanthocephala from passerine birds in Alaska. The Journal of Parasitology 37(2): 151-159, illus. April 1951.

AMPHIBIANS & REPTILES
(See also FISHES, Noland)

BOHNSACK, KURT K. Temperature data on the terrestrial hibernation of the green frog, Rana clamitans. Copeia 1951(3): 236-239. August 1951.
A southern Michigan green frog hibernated in a soil pocket under 2 inches of compact litter. Soil moisture was recorded weekly. Temperatures at various levels above and below the surface were followed and are given in a table. It is concluded that the frog was subject to freezing and probably subfreezing temperatures. Methods used will be of interest to other workers. --W. H. Stickel.

EVANS, LLEWELLYN T. Field study of the social behavior of the black lizard, Ctenosaura pectinata. American Museum Novitates No. 1493. 26 pages, illus. March 1951.
Report of a study made in the state of Morelos, Mexico. The black iguana usually has large territories; but where loose stone walls were near good food and water supplies, territories were minute, limited to a short section of wall. A well-marked dominance hierarchy among the males of the colony is described.--W. H. Stickel.

FITCH, HENRY S. A simplified type of funnel trap for reptiles. Herpetologica 7(2): 77-80, illus. June 1951.
Description and sketch of trap easily made from small pieces of hardware cloth. Entrance funnels have swinging doors of transparent plastic. No drift fences were used, but traps were set along objects that would serve as natural drift fences. Most species of reptiles were collected more efficiently by trap than by hand. Many amphibians and mammals died in the traps.--W. H. Stickel.

FOX, WADE. Relationships among the garter snakes of the Thamnophis elegans rassenkreis. University of California Publications in Zoölogy 50(5): 485-529, illus. July 1951.
The many forms of this complex species are assigned to 2 groups, one terrestrial, one aquatic. These 2 groups overlap greatly in range, but interbreed in only one area, where there is true, primary intergradation. Variation in the groups is discussed and 2 new races are described. Habitats and foods of several forms are considered.--W. H. Stickel.

HEBARD, WILLIAM B. Notes on the ecology of gartersnakes in the Puget Sound region. Herpetologica 7(2): 61-62. June 1951.
Habitat preferences, foods, protective coloration, and behavior of 4 forms of Thamnopnis in the same region.--W. H. Stickel.

KLAUBER, L. M. Classification and ranges of the gopher snakes of the genus Pituophis in the western United States. Bulletins of the Zoological Society of San Diego, No. 22. 83 pages, illus. May 1947.

AMPHIBIANS & REPTILES--Continued

KLAUBER, LAURENCE M. The shovel-nosed snake, Chionactis, with descriptions of two new subspecies. Transactions of the San Diego Society of Natural History 11(9): 141-204, illus. April 1951.

A thorough and detailed revision of these small desert snakes. Two species are recognized: occipitalis with 4 races, palarostris with 2. All that is known of their ecology, habits, and life history is included.--W. H. Stickel.

KOSTER, WILLIAM J. The distribution of the Gila monster in New Mexico. Herpetologica 7(3): 97-101, illus. September 1951.

Locality records for this lizard in 4 counties of southwestern New Mexico are listed and mapped.--W. H. Stickel.

MILLER, MALCOLM R. Some aspects of the life history of the yucca night lizard, Xantusia vigilis. Copeia 1951 (2): 114-120, illus. June 1951.

Habitat, behavior, seasonal activity, heat tolerance, numbers, foods, reproductive cycle, size, and growth.--W. H. Stickel.

NEILL, WILFRED T. The eyes of the worm lizard, and notes on the habits of the species. Copeia 1951 (2): 177-178. June 1951.

Presence or absence of eyes in Rhineura floridana is not correlated with locality or with size of animal. Known foods of the species are earthworms and spiders. A maximum length of 353 mm. is recorded.--W. H. Stickel.

NEILL, WILFRED T. A new subspecies of dusky salamander, genus Desmognathus, from south-central Florida. Publications of the Research Division, Ross Allen's Reptile Institute 1(3): 25-38, illus. March 1951.

Life history, ecology, intergradation, and phylogeny of D. fuscus carri are discussed at length.--W. H. Stickel.

NEILL, WILFRED T. A new subspecies of salamander, Pseudobranchus, from the Gulf Hammock Region of Florida. Publications of the Research Division, Ross Allen's Reptile Institute 1(4): 39-46, illus. March 1951.

Includes range map for the known forms of P. striatus, and data on habits, habitat, and intergradation.--W. H. Stickel.

NEILL, WILFRED T. The taxonomy of North American soft-shelled turtles, genus Amyda. Publications of the Research Division, Ross Allen's Reptile Institute 1(2): 7-24, illus. January 1951.

The soft-shelled turtles of the U. S. are regarded as constituting but 2 species, A. mutica (monotypic) and A. ferox (6 subspecies). Many distributional problems are discussed, and a range map is provided.--W. H. Stickel.

PEREZ, MARIO E. The food of Rana catesbeiana Shaw in Puerto Rico. Herpetologica 7(3): 102-104. September 1951.

Stomachs of 50 specimens were examined and some of the foods are listed. No evidence was found that bullfrogs prey on young of the agriculturally important Bufo marinus; but feeding habits of the frog were found to be much less beneficial than those of the toad.--W. H. Stickel.

AMPHIBIANS & REPTILES--Continued

PERKINS, C. B. A key to the snakes of the United States. 2nd edition. Bulletins of the Zoological Society of San Diego, No. 24. 79 pages, illus. August 1949. $1.00.

This useful semi-technical key will be of great value to serious amateurs, students, and professional workers. It is based on external characters, and these are explained by labeled drawings and a glossary. There are keys to all groups, from family through subspecies. The range of each form is stated. Common names are suggested for all forms. The pamphlet is issued in punched form, so that supplementary sheets can be inserted.--W. H. Stickel.

PERKINS, C. B. The snakes of San Diego County [California] with descriptions and key. Second edition. Bulletins of the Zoological Society of San Diego, No. 23. 77 pages, illus. March 1949.

POPE, CLIFFORD H. and POPE, SARAH H. A study of the salamander Plethodon ouachitae and the description of an allied form. Bulletin of the Chicago Academy of Sciences 9(8): 129-152, illus. May 1951.

Detailed data on the distribution, variation, ecology, habits, reproduction, and growth of P. ouachitae. P. caddoensis is described as new and its habitat is discussed.--W. H. Stickel.

SMITH, HOBART M. and KENNEDY, J. P. Pituophis melanoleucus ruthveni in eastern Texas and its bearing on the status of P. catenifer. Herpetologica 7(3): 93-96, illus. September 1951.

The occurrence of P. m. ruthveni in eastern Texas is demonstrated, and the intermediacy of this form between sayi and melanoleucus is described. It is proposed to treat all pine, bull, and gopher snakes of the U. S. as races of melanoleucus.--W. H. Stickel.

STEBBINS, ROBERT C. and LOWE, CHARLES H. Subspecific differentiation in the Olympic salamander Rhyacotriton olympicus. University of California Publications in Zoölogy 50(4): 465-483, illus. July 1951.

A northern and a southern race are recognized. Variation and intergradation are described. Many data are given on habitat, temperature of body in relation to that of environment, and reproduction.--W. H. Stickel.

STUART, L. C. The distributional implications of temperature tolerances and hemoglobin values in the toads Bufo marinus (Linnaeus) and Bufo bocourti Brocchi. Copeia 1951 (3): 220-229, illus. August 1951.

The upland B. bocourti proved to have less tolerance of high temperatures and to have higher hemoglobin values than did the lowland B. marinus. Uncontrolled physiological variables are discussed.--W. H. Stickel.

SUZUKI, HOWARD K. Recent additions to the records of the distribution of the amphibians in Wisconsin. Transactions of the Wisconsin Academy of Sciences, Arts and Letters 40(pt. 2): 215-234, illus. 1951.

This article maps by counties the known distribution of 18 species, tabulates recent records, and discusses habitats and distribution.

FISHES
(See also MAMMALS--FURBEARERS (BEAVER), Bailey & Stephens)

EVERHART, W. HARRY. Fishes of Maine. 53 pages, illus. The Department of Inland Fisheries and Game, Augusta, Me. 1950. $1.00.
This account of the freshwater fishes describes their habits and environment and has illustrated keys to genera and species.

FELIN, FRANCES E. and MARR, JOHN C. The possible importance of other invertebrates in sardine investigations. Transactions of the Sixteenth North American Wildlife Conference. Pages 431-435. 1951.
Following a discussion of the distribution and abundance of whales, porpoises, seals, sea lions, albatrosses, and shearwaters, the authors conclude that "The relationship of birds and mammals to the fluctuations in abundance of sardines may prove to be a direct and close one, or it may prove to be indirect and removed. It may well be of a nature not yet considered."

HARLAN, JAMES R. and SPEAKER, EVERETT B. Iowa fish and fishing. 237 pages, illus. State Conservation Commission, Des Moines, Iowa. 1951. $2.00.
This book aims to help Iowans enjoy more fully their fishing opportunities and to answer their questions. It locates and describes the principal fishing waters, describes and gives the life stories of all the species found in the State, and tells how to catch them. There are beautiful color plates of 24 kinds of fish, photos of many others, and useful drawings of common foods and of characters used in identification.

NOLAND, WAYLAND E. The hydrography, fish, and turtle population of Lake Wingra. Transactions of the Wisconsin Academy of Sciences, Arts and Letters 40(pt. 2): 5-58, illus. 1951.

MOLLUSKS

GLUD, JOHN B. The effect of man on shellfish populations. Transactions of the Sixteenth North American Wildlife Conference. Pages 397-402. 1951.
History of the depletion of soft clams and oysters as a result of man's activities and other factors; and history of the restoration of the oyster fishery through private farming. The author suggests private farming as a solution to the present shortage of clams.

INSECTS

KLOTS, ALEXANDER B. A field guide to the butterflies of North America, east of the Great Plains. 349 pages, illus. Houghton Mifflin Co., Boston. 1951. $3.75.
A review by Harry B. Weiss on page 48 of the March 1951 Journal of the New York Entomological Society says that this ".....is the most complete and exhaustive guide that has ever appeared." "Every important species is excellently illustrated, ..." It ".....is both readable and scientifically accurate, and it has been needed for many years."

VEGETATION--FLORAS & MANUALS

CORRELL, DONOVAN STEWART. Native orchids of North America, north of Mexico. 400 pages, illus. Chronica Botanica Co., Waltham, Mass. 1950. $7.50.

A beautifully composed, informative book with keys, technical descriptions, 146 large drawings showing whole plants and details of flowers, and much information on habitat, distribution, and culture.

FULLER, GEORGE D.; LINK, GEORGE M.; and TOMASEK, ANTON J. Forest trees of Illinois: how to know them. Seventh edition. 70 pages, illus. Dept. of Conservation, Springfield, Ill. 1950.

PATRAW, PAULINE MEAD. Flowers of the southwest mesas. 112 pages, illus. Southwestern Monuments Association, Popular Series No. 5. 1951. $1.00.

A companion to Dodge's "Flowers of the Southwest Deserts" (see Wildlife Review No. 64, page 40). It contains large, clear, line drawings of 145 kinds of plants and accounts of about 40 more; a brief description of the pinyon-juniper woodland region in which they grow (much of Nevada, Utah, Colorado, Arizona, and New Mexico); and a list of flowers by colors.

VEGETATION--FOREST

BAKER, HAROLD L. and POLI, ADON. Area and ownership of forest land in Trinity County, California. 23 pages, illus. U. S. D. A., California Forest and Range Experiment Station, Forest Survey Release No. 9. April 1951.

Aerial photographs are the base for this report. A colored map shows 4 types of commercial forest, 4 age classes, noncommercial forest, and unforested land. Most of the county is forested.

CUNNINGHAM, R. N. Changes in forest conditions, 1936-1949, north central Minnesota and upper peninsula of Michigan (a preliminary analysis). 20 pages, illus. U. S. D. A., Lake States Forest Experiment Station, Station Paper No. 25. July 1951.

CURTIS, J. T. and McINTOSH, R. P. An upland forest continuum in the prairie-forest border region of Wisconsin. Ecology 32(3): 476-496, illus. July 1951.

The authors suggest the vegetational continuum index as ".....a useful tool for the coordination of much independently derived information on animal populations, microbiota, and physical factors of the environment."

LINDSEY, ALTON A. Vegetation and habitats in a southwestern volcanic area. Ecological Monographs 21(3): 227-253, illus. July 1951.

The Grants Lava Bed, mostly in Valencia and McKinley Counties, New Mexico contains 220 square miles at altitudes ranging from 8300 to 6200 feet. It has an upper belt dominated by mixed Douglas fir and ponderosa pine, a middle belt of ponderosa pine, and a lower belt dominated by Apache-plume.

VEGETATION--FOREST--Continued

McGUIRE, JOHN R. and WRAY, ROBERT D. Forest statistics for New York Forest District No. 1. U. S. D. A., Northeastern Forest Experiment Station, Forest Statistics Series: New York No. 1. 21 pages. June 1951.

This district comprises Delaware, Otsego, and Schoharie Counties. Not quite half of the total area is in forest. Sugar maple-beech-yellow birch forest predominates, but 11 other forest types occur in the region.

NELSON, THOMAS C. A reproduction study of northern white cedar. 100 pages, illus. Game Division, Department of Conservation, Lansing, Mich. 1951.

White cedar (Thuja occidentalis) stands occupy more than 600,000 acres in Michigan. White cedar is the chief source of poles and posts in the State and, where available, it is the staple winter food of white-tailed deer. This study was made in Upper Peninsula swamps. Among the factors affecting reproduction are browsing by deer and snowshoe hares.

PEARSON, G. A. Management of ponderosa pine in the Southwest, as developed by research and experimental practice. U. S. D. A., Agriculture Monograph No. 6. 218 pages, illus. 1950.

The discussion of regeneration on pages 110-142 includes comments on damage to young natural growth and to plantations by livestock, deer, and rodents. A chapter on "Control of Damaging Agents", pages 143-169, goes into more detail on the subject of damage by small rodents, porcupines, rabbits, livestock, and deer.

POTZGER, J. E. and POTZGER, ESTHER. Secondary succession in an Illinoian tillplain habitat. Proceedings of the Indiana Academy of Science 59: 95-101. 1950.

A vigorous young stand of sweet gum and red maple occupies an Indiana tract that has been out of cultivation for about 15 years. Succession there seems to operate as waves of invasion, each of which involves several species of trees.

VEGETATION--BRUSHLAND

MITCHELL, GLENN E. Status of browse on ranges of eastern Oregon and eastern Washington. Journal of Range Management 3(4): 249-253. July 1951.

This article concerns browse as winter food for mule deer and elk and its progressive reduction by livestock in some areas.

MULLER, CORNELIUS H. The significance of vegetative reproduction in Quercus. Madroño 11(3): 129-137, illus. July 1951.

Includes descriptions of Quercus havardi shinneries in the southern Great Plains and live oak (Q. virginiana) mottes on the coastal plain of Texas.

VEGETATION--GRASSLAND

ARNER, DALE H. Experimental planting on power lines rights of way. Maryland Conservationist 28(2): 13-15, 27-28, illus. Summer 1951.
During the last 3 years seedings were made along 2 power lines and several woodland roads in western Maryland. Several grasses and legumes grew well, attracted wildlife, and retarded the invasion of trees and shrubs.

ARNER, DALE H. Experimental plantings on power line rights-of-way and woodland roads. Transactions of the Sixteenth North American Wildlife Conference. Pages 331-338. 1951.
See the author's article published in the Summer 1951 Maryland Conservationist.

MENTZER, LOREN W. Studies on plant succession in true prairie. Ecological Monographs 21(3): 255-267, illus. July 1951.
Describes late stages of succession in two prairie areas near Lincoln, Nebraska.

VEGETATION--WILDLIFE PLANTS

BIFFLE, EDGAR B. Development and application of a wildlife cover restoration project in Missouri. 24 pages, illus. Conservation Commission, State of Missouri, [Jefferson City, Mo.] August 1951.
This report presents ".....two aspects of the multiflora rose project: the history of its development, and the basic reasons for its acceptance by the public."

KOMAREK, E. V. Florida corn, Indian maize: its history, culture, and many uses. 596 pages, illus. Florida Department of Agriculture, Tallahassee, Fla. 1951.
22 chapters end with one on "Cornfields and Wildlife" in which the author states: "The development and subsequent use of hybrid corn with its attendant better cultural methods such as the use of cover crops and more fertilizer, has in the writer's opinion done more for the welfare of this desirable sporting bird [quail] than any other single factor in the northern part of Florida." He tells how modern corn culture has benefited quail and other game, and how the damage done in corn fields by moles, mice, and cotton rats may be controlled.

VEGETATION--AQUATIC

MARTIN, ALEXANDER C. Identifying pondweed seeds eaten by ducks. The Journal of Wildlife Management 15(3): 253-258, illus. July 1951.
"Most pondweed seeds obtained from duck gizzards can be identified to the species." "Of the 35 to 40 species of pondweeds in the United States, only slightly more than half are plentiful enough to be significant for waterfowl." The author's drawings of surfaces and interiors show differences between the seeds of 21 species.

VEGETATION--AQUATIC--Continued

PRESCOTT, G. W. Algae of the western Great Lakes area. 946 pages, illus. Cranbrook Institute of Science, Bulletin No. 31. 1951. $10.50.

This book describes all the fresh-water algae except diatoms and desmids (about 1100 species) that are known from Michigan and Wisconsin. Two chapters describe in detail (1) the distribution of algae in relation to soil and lake types and (2) physical-chemical factors in relation to plankton production. There are a series of good drawings illustrating morphological terms, keys, a 50-page bibliography, and 136 plates of large, clear drawings of the species treated.

ROSS, JAMES G. and CALHOUN, BARBARA M. Preliminary reports on the flora of Wisconsin. XXXIII. Najadaceae. Transactions of the Wisconsin Academy of Sciences, Arts and Letters 40(pt. 2): 93-110, illus. 1951.

Keys, maps, and distribution notes on 28 species of Potamogeton, 5 of Najas, and Zannichellia palustris.

LAND & SOILS

SOIL SURVEY STAFF, BUREAU OF PLANT INDUSTRY, SOILS, AND AGRICULTURAL ENGINEERING. Soil survey manual. 503 pages, illus. U. S. D. A., Agriculture Handbook No. 18. August 1951. $3.00 from Government Printing Office.

A much enlarged revision of U. S. D. A. Miscellaneous Publication 274, published in 1937. It is intended for use by soil scientists engaged in soil classification and mapping; but for wildlife biologists it contains much of interest regarding soil surveys and their use, map making, and other subjects.

STRAHLER, ARTHUR N. Physical geography. 442 pages, illus. John Wiley & Sons, Inc., New York. 1951. $6.00.

Basic information on "The Earth as a Globe", "Maps and Landforms; Rocks and Structures", and "Weather and Climate; Natural Vegetation and Soils", thoroughly and beautifully illustrated with maps, diagrams, and photographs.

WATER

CARSON, RACHEL L. The sea around us. 230 pages, illus. Oxford University Press, New York. 1951. $3.50.

A review by R. Tucker Abbott on page 137 of The Scientific Monthly for August 1951 says, in part, "Rarely has the soul of the sea been so adequately fathomed or its thousand faces so delightfully pictured as Rachel Carson has done in her latest book, The Sea Around Us." "The book is divided into three main sections, the first dealing in eight chapters with various modern phases of oceanic biology and marine geography, the second part picturing the dynamics of waves, currents, and tides, and the last three chapters discussing man and the sea about him."

CLIMATE & WEATHER

(See LAND & SOILS, Strahler)

AUTHOR INDEX

	Page
Ackerman, Edward	8
Adams, Lowell	10
Agersborg, H. P. K.	5
Alcorn, J. R.	29
Alexander, W. B.	25
Allee, W. C.	2
Allen, George W.	10
Allen, John M.	18
Allen, Robert P.	10
Arner, Dale H.	38
Arrington, O. N.	12
Bailey, R. Wayne	14
Baker, Harold L.	36
Banfield, A. W. F.	12
Barick, Frank B.	10
Bassett, Neil R.	12
Beach, Grace O.	2
Beard, Elizabeth B.	26
Bedichek, Roy	2
Bellrose, Frank C.	22
Biffle, Edgar B.	38
Blair, W. Frank	17
Bode, I. T.	6
Bohnsack, Kurt K.	32
Bonnot, Paul	20
Bradley, Ben O.	22
Brandly, C. A.	21
Brown, Robert Z.	17
Bryant, Charles R.	24
Bump, Gardiner	26
Bunting, Henry	18
Calhoun, Barbara M.	39
Calhoun, John B.	17
Calhoun, W. T.	4
Carson, Rachel L.	39
Cartwright, B. W.	30
Chase, Elizabeth Brown	22
Chase, Warren W.	26
Cheatum, E. L.	18
Christiansen, M.	23
Christisen, Donald M.	27
Cole, LaMont C.	8
Colls, D. G.	23
Conn, Hugh R.	15
Cook, Arthur H.	22
Cooney, Robert F.	12
Correll, Donovan Stewart	36
Cottam, Clarence	23
Crawford, Bill T.	6
Cruikshank, Allan D.	21
Crump, William I.	29
Cunningham, R. N.	36
Curtis, J. T.	36
Dasmann, William P.	10
Davis, David E.	17
Davis, Grant	28
Day, Albert M.	6
de Vos, A.	13,15
Durisch, Lawrence L.	6
Dustman, Eugene H.	13
East, Ben	26
Edwards, Alfred E.	12
Elkins, Winston A.	24
Elton, Charles	15
Evans, Llewellyn T.	32
Everhart, W. Harry	35
Felin, Frances E.	35
Fisher, H. D.	20
Fitch, Henry S.	32
Fox, Wade	32
Freeburn, C. C.	6
Fritz, Emanuel	13
Fuller, George D.	36
Fuller, W. A.	14
Gaufin, D. M.	9
Glover, Fred A.	23
Glud, John B.	35
Grasse, James E.	6
Grieb, Jack R.	6
Grizzell, Roy A., Jr.	18
Gunther, Lloyd F.	8
Hall, J. Alfred	9
Haller, Frank D.	16
Hamilton, Andrew	20
Hamilton, W. J., Jr.	16
Hammer, Marie	30
Handley, C. O.	18
Hansen, Henry A.	23
Hanson, William R.	27
Hargrave, H. J.	13
Harlan, James R.	35
Harper, Thomas A.	26

	Page
Harris, Robert W.	7
Hart, Chester M.	27
Headstrom, Richard	21
Hebard, William B.	32
Hecht, William Robert	30
Hendricks, Bartlett	21
Hendrickson, George O.	27
Herman, Carlton M.	9,23,30
Howard, Walter E.	18
Howell, Joseph C.	21
Hungerford, K. E.	28
Ingles, Lloyd G.	18
Interstate Deer Herd Committee	10
Jackson, William B.	17
Jaeger, Edmund C.	5
Jensen, Wallace	11
Jones, Fred L.	27
Jones, Robert D., Jr.	20
Julander, Odell	11
Kennedy, J. P.	34
Kissling, R. E.	31
Klauber, L. M.	32,33
Klots, Alexander B.	35
Knight, Iola Musfeldt	14
Knight, T. H. Owen	4
Komarek, E. V.	38
Koster, William J.	33
Krefting, Laurits W.	13
Lahermaa, G.	18
Lampio, Teppo	3,16,19
Latham, Roger M.	7
Leitch, William G.	23
Liers, Emil	15
Ligon, J. Stokley	29
Lindsey, Alton A.	36
Link, George M.	36
Linsdale, Jean M.	17
Liscinsky, Stephen A.	18
Longwell, John R.	26
Lowe, Charles H.	34
Lowery, George H., Jr.	20
Luttringer, Leo A., Jr.	27
Lutz, H. J.	13
Lyon, L. Jack	28
MacLulich, D. A.	9
Macon, Hershal L.	6
Madsen, F. Jensenius	25
Madsen, Holger	23,26
Manwell, R. D.	31
Marr, John C.	35
Marshall, William H.	15
Martin, Alexander C.	5,38
McCormack, Roger J.	12
McCullough, Robert A.	14
McGuire, John R.	37
McIntosh, R. P.	36
McKean, John	27
McKean, Wm.	10,11
Mentzer, Loren W.	38
Messelt, M. T.	7
Miles, Virgil I.	31
Miller, Malcolm R.	33
Mills, Harlow B.	23
Mitchell, Glenn E.	37
Morse, John	24
Muller, Cornelius H.	37
Murdy, Ray	24
Murie, Adolph	16
Murphy, Dean Allen	27
Musgrove, Bill F.	15
Musselman, Harold E.	7
Musser, Francis B.	2
Neal, Richard Keith	19
Neill, Wilfred T.	33
Nelson, Arnold L.	5
Nelson, Thomas C.	37
Nelson, Urban C.	24
Noland, Wayland E.	35
Odin, Clyde R.	24
Oliver, Wendell H.	23
Olsen, O. Wilford	11
Olson, Sigurd F.	7
Osmer, Tom	19
Packard, Fred Mallery	21
Palmer, Ralph S.	11
Pätiälä, Risto	4
Patraw, Pauline Mead	36
Paynter, Raymond A., Jr.	24
Pearsall, W. H.	2
Pearson, G. A.	37
Perez, Mario E.	33
Perkins, C. B.	34
Peters, James Lee	21
Peters, W. Austin	7
Peterson, Randolph L.	13
Petrides, George A.	24

	Page
Pietsch, Lysle R.	15
Poli, Adon	36
Pollack, E. Michael	17
Pope, Clifford H.	34
Pope, Sarah H.	34
Potzger, Esther	37
Potzger, J. E.	37
Prescott, G. W.	39
Quay, Thomas L.	29
Quick, Horace F.	15
Quick, Ralph H.	11
Ratcliffe, F. N.	19
Rausch, Robert	4,25
Redmond, Howard R.	18
Reeves, Maurice C.	27
Reeves, William C.	4
Richardson, Frank	29
Riney, Thane	20
Riordan, Laurence E.	3
Robb, Dunbar	11
Robbins, Otis	27
Robinette, W. Leslie	11
Roby, Edwin F.	28
Rosen, M. N.	11
Roslund, Harry R.	9
Ross, James G.	39
Ryder, Roland A.	24
Salter, Robert L.	26
Sanderson, Glen C.	17
Sanderson, H. B.	29
Sandfort, Wayne W.	28
Sands, Daniel E.	17
Saunders, Edward V.	14
Sayama, Kenji	9
Schmidt, Karl P.	2
Schoenfeld, Clarence A.	5
Schorger, A. W.	13
Schwartz, Charles W.	28,29
Schwartz, Elizabeth Reeder	28,29
Scott, Robert F.	7
Sears, Paul B.	9
Shaffer, Dale E.	27
Shapton, Warren W.	7
Sheads, Richard D.	29
Short, A. W.	5
Shortt, Angus H.	30
Siegler, Hilbert R.	12
Smith, Eldon H.	28
Smith, Hobart M.	34
Soil Survey Staff	39
Sooter, Clarence A.	31
Spärck, R.	25
Speaker, Everett B.	35
Spencer, David L.	24
Springer, Paul F.	3
Stabler, Robert M.	30
Stebbins, Robert C.	34
Stephens, R. F.	14
Stewart, Robert E.	25,31
Stiles, Bruce F.	7
Stow, Marcellus H.	3
Strahler, Arthur N.	39
Stuart, L. C.	34
Suzuki, Howard K.	34
Switzenberg, D. F.	16
Sylvester, Walter R.	5
Temple, J. Lawrence	8
Tener, John S.	25
Terrill, Lewis McI.	26
Tevis, Lloyd P.	17
Thompson, St. Clair	30
Tilden, Freeman	3
Tolman, C. D.	11
Tolman, Con	12
Tomasek, Anton J.	36
Truax, Wayne C.	8
Uzzell, P. B.	30
Van Cleave, Harley J.	25,31
Webster, John R.	3
Wells, Robert A.	29
Whitaker, J. R.	8
Williams, Cecil	25
Williams, Ralph B.	31
Wilson, Ken	14
Wingfield, Billy Hillman	25
Wood, Norman A.	21
Wray, Robert D.	37
Yeager, Lee E.	3,14,28
Zim, Herbert S.	5
Zorb, Gordon Lester	28

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